

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
7 July 2005 (07.07.2005)

PCT

(10) International Publication Number
WO 2005/062064 A1

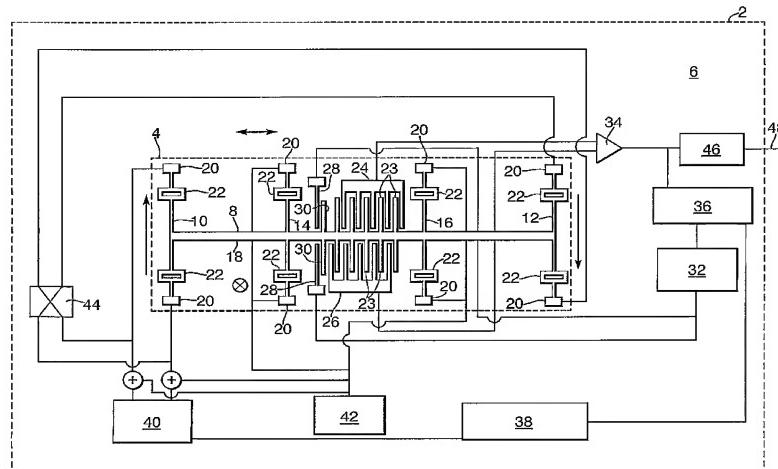
- (51) International Patent Classification⁷: **G01R 33/028**, 33/022
- (74) Agent: DUNN, P., E.; QinetiQ Ltd, IP Formalities, Cody Technology Park, A4 Building, Room G016, Ively Road, Farnborough, Hampshire GU14 0LX (GB).
- (21) International Application Number: PCT/GB2004/005267
- (22) International Filing Date: 16 December 2004 (16.12.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 0329959.1 24 December 2003 (24.12.2003) GB
- (71) Applicant (*for all designated States except US*): **QINETIQ LIMITED** [GB/GB]; Registered Office, 85 Buckingham Gate, London SW1E 6PD (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **KING, David, Oury** [GB/GB]; Qinetiq Limited, Malvern Technology Centre, Room E9A03, St Andrew's Road, Malvern, Worcestershire WR14 3PS (GB). **BRUNSON, Kevin, Michael** [GB/GB]; Qinetiq Limited, Malvern Technology Centre, Room E9A08, St Andrew's Road, Malvern, Worcestershire WR14 3PS (GB).
- (81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: COMBINED MAGNETIC FIELD GRADIENT AND MAGNETIC FIELD STRENGTH SENSOR



(57) Abstract: A magnetic field sensor device (2) is described that comprises an oscillatory member (8) and current control means (6). The current control means (6) is arranged to pass an alternating current (AC) along at least first (10) and second (12) current paths provided through the oscillatory member (8) and is arranged to provide magnetic gradiometer mode operation (i.e. to measure magnetic field gradient) in which current flow through the first current path (10) is in substantially the opposite direction to current flow through the second current path (12). The current control means (6) can also prove magnetometer mode operation (i.e. to measure magnetic field strength). The magnetic field sensor (2) may be used in a compass.

WO 2005/062064 A1



Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.